

DRIVING IMPROVEMENT FOR ALBERTA'S ROADS

Transportation Infrastructure Brief Executive Summary

Roads play a crucial role in our lives. They facilitate movement and permit the realization of personal convenience, economic prosperity and social goals. The benefits of roads range from improved safety and better access to jobs to the preservation and enhancement of personal freedom and independence. The mobility enabled by roads is an essential foundation for a well functioning and modern society.

Public funding for roads has faced serious challenges in recent decades as the various levels of government have struggled to satisfy increasing demands with limited resources. As a result Canada's network of roads and highways has deteriorated. Over the last 16 years the percentage Alberta's highways in poor condition has increased 44%. A recent report from Statistics Canada confirms more than 13,500 kilometres of roads now fall into the fair, poor or very poor category.¹

Yet provincial investment in the maintenance and rehabilitation of our road infrastructure is declining when it is desperately needed. Unfortunately, at a time when we should be investing in our roads the province has reduced its commitment to planned road and bridge maintenance and renewal by 29% or \$484 million. The continued degradation of our road network will ultimately put pressure on future capital budgets to address these short-sighted decisions

¹ <https://www150.statcan.gc.ca/n1/daily-quotidien/180824/dq180824a-eng.htm>

Resolution of the current road-funding crisis requires increased dedication of road revenues, improved co-operation among the various levels of government, and a greater onus on drivers to pay the real costs of road use. Yet governments remain locked into the status quo. We need a change in road funding philosophy. Whether the solution involves the explicit allocation of fuel taxes, the implementation of real tolls, or the establishment of road management agencies, a consensus appears to be forming that the current management of roads is no longer tenable in Canada.

Introduction

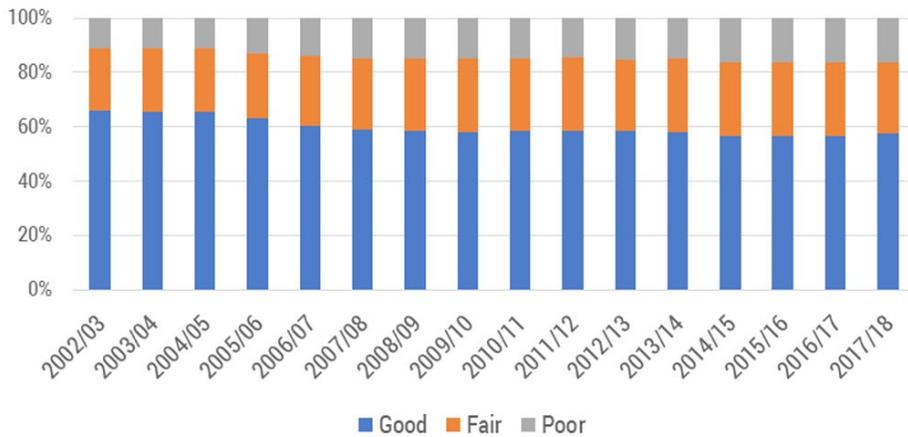
Alberta is a growing province. Over the past 20 years, Alberta has led all provinces in economic growth, with an average annual GDP growth of 3.2% per year.² Our population has increased by 1.3 million people since 2000, and is projected to add approximately 2.1 million residents over the next 29 years, reaching 6.4 million by 2046; an average annual growth rate of 1.4%.³ This growth creates the need for additional and improved transportation infrastructure including municipal roads, highways, overpasses, and bridges to sustain economic and social benefits for Albertans.

Highways and road infrastructure provide critical links for moving goods, services, and people which is fundamental to Alberta's continued growth and prosperity. There are over 226,000 kilometres of public roads in Alberta – approximately 22% of the total national network. The vast

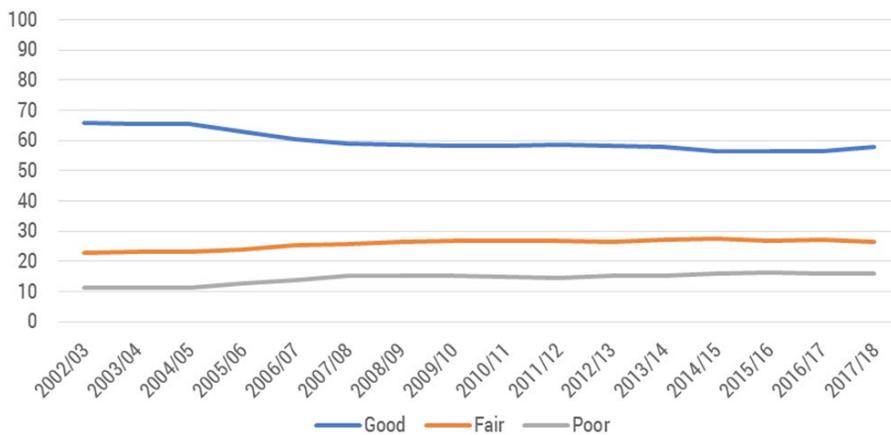
² <http://www.albertacanada.com/business/overview/the-economy.aspx>

³ <https://open.alberta.ca/dataset/90a09f08-c52c-43bd-b48a-fda5187273b9/resource/038f0a3f-1df1-4993-a29c-02a7f35f6ad3/download/2018-2046-alberta-population-projections-highlights.pdf>

Physical Condition of Provincial Highways



Physical Condition of Provincial Highways (%)



majority of our public roads, almost 165,000 kilometres, are gravel, treated or earthen, largely falling under municipal jurisdiction.⁴

The Government of Alberta manages more than 31,400 kilometres of highways, the greatest number of kilometres per capita in Canada. This includes nearly 4,500 bridges, interchanges and culverts.⁵ The Government of Alberta uses the International Roughness Index assess the

4 <http://www.albertacanada.com/business/overview/roads-and-highways.aspx>

5 <https://open.alberta.ca/dataset/9d234882-5822-4e06-8e08-b00faa488647/resource/4abef6be-4901-47db-9cf9-5efbf18088f5/download/transportation.pdf>

physical condition of provincial highways. Over 13,500 kilometres of Alberta highway roads are now classified as in fair or poor condition. Over the last 16 years the percentage Alberta's highways in poor condition has increased 44%.

Funding and Management of Roads in Canada

Under Canada's *Constitution Act*, provinces and territories have exclusive jurisdiction over the building and maintenance of national highways.⁶ Provincial and territorial governments are responsible for the planning, design, construction, operation, maintenance and financing of highways within their jurisdiction. Exemptions exist where the federal government is responsible for the roads crossing federal property, such as National Parks.⁷ Responsibility for local and municipal roads fall under the jurisdiction of municipal governments.

Given the importance of efficient and effective transportation systems to the success of the Canadian economy, the federal government does provide some level funding assistance to both municipal and provincial governments to assist with transportation infrastructure projects. Funding to support federal investment in transportation infrastructure is largely provided for through taxes (including an excise tax on gasoline and diesel) collected and consolidated as general revenues then allocated to fund government infrastructure programs. This is a critical distinction that differentiates the treatment of roads in Canada from those

6 https://www.loc.gov/law/help/infrastructure-funding/canada.php#_ftn2

7 <https://www.tc.gc.ca/eng/policy/acg-acgd-menu-highways-2141.htm>

in the United States. While fuel excise taxes, licensing fees and vehicle registration fees are collected in both countries, these charges cannot be considered true road user fees in Canada because the revenues they generate are not explicitly allocated to roads.

Provincial funding of road infrastructure projects varies by jurisdiction. All jurisdictions collect transportation related revenues through provincial fuel taxes and user fees (tolls, vehicle, fines, licensing and registration fees). According to a report by the CD Howe Institute transportation related revenues covered less than 70% of roadway expenses across Canada between 2008 and 2014.⁸

Unlike other jurisdictions, the general practice in Canada is not to formally link fuel tax revenues to highway or road infrastructure projects.⁹ These taxes are generally collected and consolidated into general revenue for redistribution to government programs through provincial budgetary processes. Nova Scotia is the exception. Under the Provincial Finance Act, the Province is required to direct all provincial gas tax and net Registry of Motor Vehicles revenues towards the construction and maintenance of the Nova Scotia highways.¹⁰

Ontario has formally dedicated a portion of their gasoline tax revenue to support municipal public transportation projects. In 2013, the province made the funding of two cents per litre of gasoline tax permanent to through the passing of the Dedicated Funding for Public Transportation Act, 2013. In 2017, the Enhanced Gas Tax Program was announced increasing funding for public transit beginning in 2019 through an enhancement to the existing gas tax program, doubling the municipal share from two cents per litre to four cents by 2021.¹¹

In 2008, the Government of Alberta introduced the province's first 20-year plan for infrastructure which included the goal of developing a world-class integrated transportation system.¹² However the province has not provided dedicated funding to meet this goal. Furthermore projects may move in or out of the construction program based on emerging needs, changing construction schedules, or available funding which creates project uncertainty and funding instability.¹³

Municipal funding programs that have supported the development and maintenance of municipal infrastructure including roads are coming to an end, and Alberta now finds itself without the long-term stable funding necessary to supports its infrastructure plan. The finite nature of municipal infrastructure funding creates instability and uncertainty for long-term municipal planning.

Direct Transportation Revenues (in thousands of dollars)						
	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19
Motor Vehicle (fees and licenses)	492,237	516,244	516,915	502,033	508,283	512,580
Fuel Tax	926,060	944,286	1,369,976	1,343,170	1,385,251	1,414,000
Total	1,418,297	1,460,530	1,886,891	1,845,203	1,893,534	1,926,580

Alberta roads are financed from taxes collected by the government and funneled into a general revenue fund. With few exceptions, no explicit link exists between road related revenues and expenditures. The Alberta transportation system directly generates \$1.9 billion in vehicle registration fees, operators' licenses, and provincial fuel taxes for the Alberta coffers.

Alberta's Ministry of Transportation is responsible for the long-term planning of the highway network and oversees the network's design, construction, and maintenance activities. As part of the Government of Alberta's \$26.6-billion Budget 2018 Capital Plan, Alberta

8 https://www.cdhowe.org/sites/default/files/attachments/research_papers/mixed/e-brief_225.pdf

9 <https://www.loc.gov/law/help/infrastructure-funding/canada.php>

10 <https://nslegislature.ca/sites/default/files/legc/statutes/pubhighw.htm>

11 <https://news.ontario.ca/mto/en/2017/01/enhanced-gas-tax-program.html>

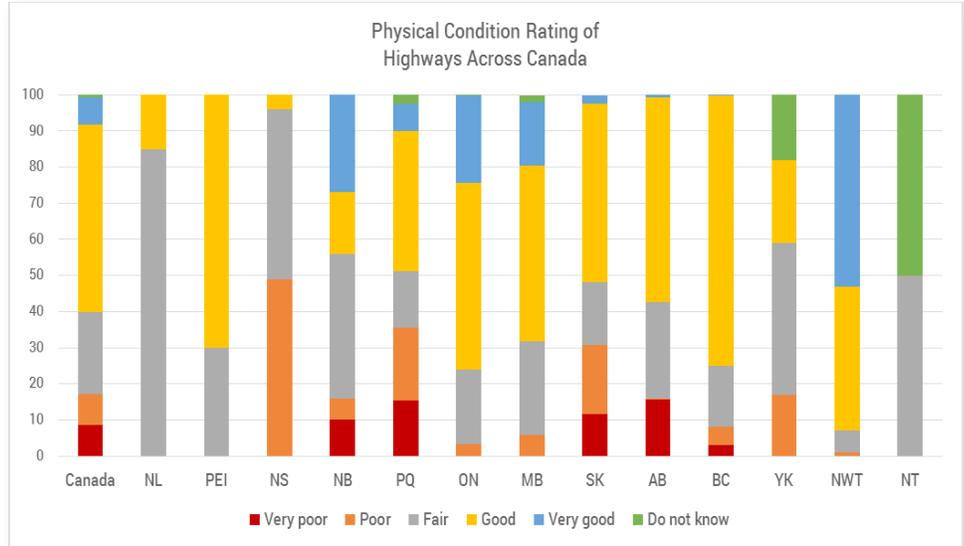
12 <https://open.alberta.ca/dataset/c908860e-0603-404f-8afd-31421ea83efc/resource/ec5c517c-986d-4c9b-b7b5-280098a038d0/download/4060237-2008-20-year-strategic-capital-plan-web.pdf>

13 <http://www.transportation.alberta.ca/documents/2018ConstructionProgram.pdf>

Transportation is investing \$5.6 billion over five years for road and bridge construction and capital maintenance and renewal (bridge construction and highway rehabilitation).

All provincial highway maintenance is directed and controlled by the Government of Alberta. Pavements on the Provincial highway network are to be surveyed every two years to inform road maintenance programs and budgets. While Alberta Transportation and contractors may both identify areas for proactive maintenance planning, it is ultimately the government that has the responsibility to determine and direct repair, maintenance and preservation activities.¹⁴

Although Alberta Transportation has tentative plans for future projects up to 2022, funding amounts can fluctuate on a political basis, without the reassurance of multi-year established contractual budgets. Funding commitments



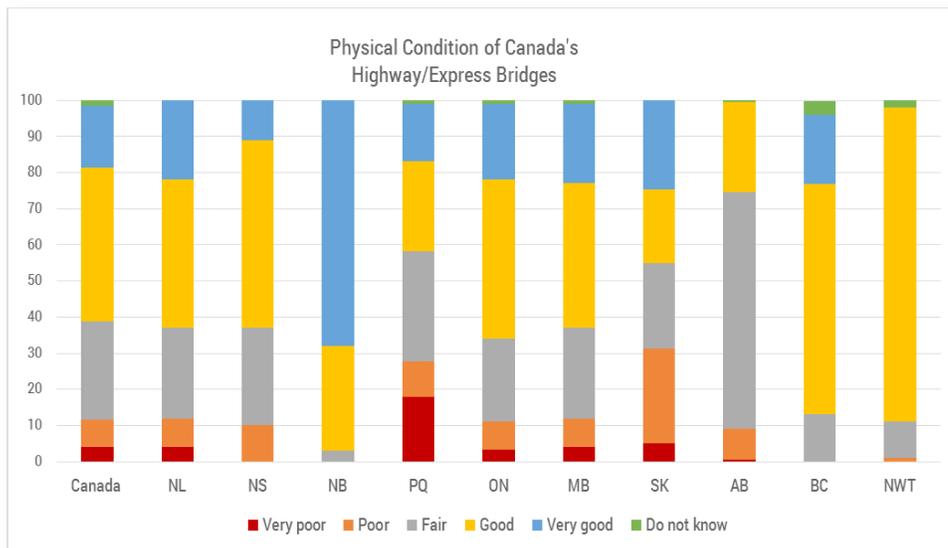
Source: Statistics Canada. Table 34-10-0070-01
Inventory distribution of publicly owned road assets by physical condition rating

are unknown until the budget year in question. For example, in the 2018-19 provincial budget, the government made the decision to reduce projected spending on the capital maintenance and renewal program by \$969 million, a reduction of 25% from what was committed in the 2017 budget and capital plan. This resulted in a \$484 million

reduction in funding for maintenance and renewal of roads and bridges. These decisions will have consequences for our transportation infrastructure, the economy and our social well being. The continued degradation of our road network will ultimately put pressure on future capital budgets to address these short-sighted decisions.

While the province has a 20-year plan for infrastructure which includes the goal of developing a world-class integrated transportation system, there is no integrated transportation strategy, plan or dedicated funding in place to achieve this goal. With

16% of Alberta's highways in poor condition and only 1% of highways in very good condition, how do we achieve a world-class transportation system?



Statistics Canada. Table 34-10-0167-01
Inventory distribution of publicly owned bridge and tunnel assets by physical condition rating

14 http://www.transportation.alberta.ca/Content/docType34/Production/los_manual.pdf

Bridges are also core components of Alberta's transportation infrastructure and are also suffering from lack of strategic foresight and investment. According to Statistics Canada, the condition of Alberta's bridge infrastructure is well below the national average with 75% of AB highways bridges in fair, poor or very poor condition. These infrastructure assets require attention or are approaching their end of life.

The current approach of funding our transportation projects stymies innovation and prevents rational, integrated, comprehensive planning. That is, although a region may need a mix of maintenance, public transit, and highway investments, these projects are funded separately using different formulas, and decision making is dominated by other determining factors rather than by adhering to logical regional or metropolitan plans or priorities.

Relationship Between Roads and the Economy

Building and maintaining effective road networks are critical for the functioning of a modern economy. Transportation infrastructure, such as roads enable economic activity connecting people, businesses and resources. The economy needs reliable road infrastructure to connect supply chains and efficiently move goods and services to domestic and international markets. Roads and highways connect households to higher quality opportunities for employment, access to healthcare and education.

Road infrastructure can affect the economy in a number of ways, nearly all of them related to increasing mobility. It can enable producers to reach markets more cheaply, to increase the size of their market area, and can increase the speed with which producers can reach markets or inputs, allowing them to hold lower inventories and carry out just-in-time production. Road infrastructure can enable workers to choose among a wider array of employment opportunities and to live farther from their workplaces.

It can enable consumers to have a more varied choice of goods, services, and prices.

Efficient road networks move people and good in such a way to increasing overall productivity that filters through the economy.¹⁵ Improving productivity reduces the cost of doing business enabling greater output. These productivity gains filter through the economy into increased business profits, reduced prices to consumers, improved access and service quality. As noted by The Canada West Foundation "traffic is slowly strangling our cities. It's the time wasted in traffic that could have been

Efficiency and Productivity



Increased efficiencies create productivity gains that deliver economic benefit, as illustrated above.

put to more productive use. It's the late deliveries, the missed appointments, and the margin of error needed to cover the risks of either."

Transportation system efficiencies also increase productivity through increased education and employment opportunities, improving the match between workers and jobs creating increased income and wealth.¹⁶ Sustainable economics indicators such as health and longevity, education attainment, social equity, employment opportunity, community livability and environmental quality, in addition to productivity and wealth can also be attributed to transportation systems.¹⁷

Not all road infrastructure produces these outcomes in the same way. Some transportation infrastructure serves purely local community needs, whereas other infrastructure enables connections to national and international markets. Besides the longer-run effects,

15 <http://www.urbanpro.co/wp-content/uploads/2017/04/Evaluating-Transportation-Economic-Development-Impacts.pdf>

16 <http://www.urbanpro.co/wp-content/uploads/2017/04/Evaluating-Transportation-Economic-Development-Impacts.pdf>

17 http://www.its.leeds.ac.uk/projects/sustainability/resources/Sustainability_Appraisal_Final_Report.pdf

highway infrastructure also can boost economic activity through immediate construction activity that results from new highway infrastructure.

McKinsey Global Institute estimates that infrastructure typically has a socioeconomic rate of return of 20 percent over time—that is, each invested dollar delivers a 20 cent increase in annual GDP in the long run. This means, provided sustainability is considered in the project, infrastructure investments can be a rare win-win, combining short-term job creation with long-term economic development.¹⁸

The future of transportation is right around the corner, technological advances and the automation of vehicles will change the way people and products move on our highways and roads. Our transportation systems will need to change to safely support the newest technologies and become the roads of the future. Major upgrades to road infrastructure will be required to maximize the benefits of autonomous vehicle which will impact our mobility, productivity and our transportation economy.

If infrastructure is to contribute to productivity and generate long-term economic gains, the investments must be strategic.¹⁹ It is important to invest wisely; the economic and productivity benefits of infrastructure investment are not automatic. Better targeting of highway investments could lead to better economic outcomes. With Alberta facing fiscal constraints implementing a more clearly defined infrastructure management approach which focuses funds on those projects that increase the most significant net benefits for Albertans.

Alberta Is Not Alone

In Canada, all orders of governments are facing infrastructure funding pressures and have been looking

¹⁸ <https://www.mckinsey.com/~media/mckinsey/industries/capital%20projects%20and%20infrastructure/our%20insights/improving%20the%20delivery%20of%20road%20infrastructure%20across%20the%20world/a-better-road-to-the-future-improving-the-delivery-of-road-infrastructure.ashx>

¹⁹ <http://cwf.ca/research/publications/at-the-intersection-the-case-for-sustained-and-strategic-public-infrastructure-investment/>

for alternative funding and financing mechanisms that can support long-term investment need.

Other provincial governments have expanded road pricing on highways and roads to finance this transportation infrastructure spending and to relieve congestion. Ontario, British Columbia and Quebec all have toll roads. Ontario is piloting High Occupancy Toll (HOT) lanes to learn about and plan for a more efficient highway network in Ontario. In British Columbia dedicated fuel taxes apply in certain regions of the province – Vancouver and Victoria to support public transit infrastructure. Montreal is another urban region that collects a public transportation tax on fuel.

In the United States, gas taxes are typically used to fund infrastructure maintenance and new projects, but the share of state and local road spending that is covered by tolls, user fees, and taxes varies by state. While politically unpopular, gas taxes, fees, and tolls are all relatively good applications of the benefit principle, the idea that taxpayers should benefit from the taxes and fees they pay. One of the primary issues, however, with both the federal and state gas tax is that they're not indexed for inflation. As time goes on with fuel-efficient vehicles and inflation increases, the nominal value of the gas tax decreases, leaving states with budget shortfalls and unfunded infrastructure. How states and cities make up the difference depends on local highway tolls, state gas taxes, and user fees for license registration, vehicle weight, and the like pay for road projects within state borders.

The Highway Trust Fund is a transportation fund in the United States which receives money from the federal fuel tax of 18.4 cents per gallon on gasoline and 24.4 cents per gallon of diesel fuel and related excise taxes. The Highway Trust Fund finances most federal government spending for highways and mass transit. Revenues for the trust fund come from transportation-related excise taxes, primarily federal taxes on gasoline and diesel fuel. In recent years, however, the trust fund has needed significant transfers of general revenues to remain solvent. Many observers of US transportation policy have called for a reevaluation of the United States' current approach to federal funding of highway infrastructure, to a user-charge system such as a vehicle-miles-traveled system.

European jurisdictions have evaluated new ways to structure and finance infrastructure programs. In 2007–2008, both Finland and Denmark established national commissions to link major central government investments in local and regional infrastructure projects for the best national economic outcome. As a result of these commission reports, both countries established new national funding and delivery mechanisms for a variety of transportation infrastructure projects deemed important to the national economy.²⁰

The best known study of this type is the Eddington Report²¹, commissioned by the United Kingdom from Sir Rod Eddington, the former head of British Airways. The large and comprehensive study attempted to assess the state of Britain's national transportation infrastructure and whether problems in the transportation network affected British productivity and economic performance. The Eddington Report concluded that major additions to the highway system were not required but that the national government should make sustained highway and other investments to improve the transportation network "in those places that are important for the U.K.'s economic success."

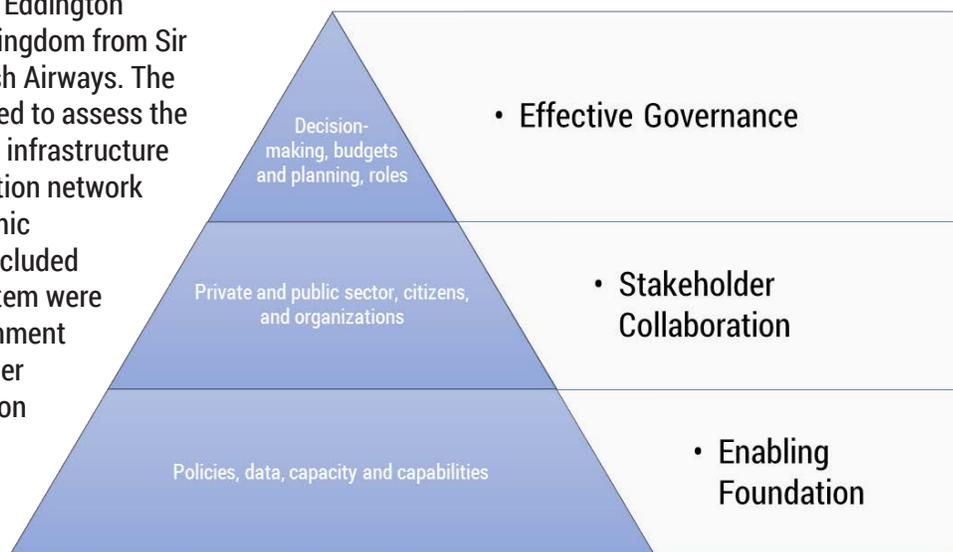
Sir Eddington later completed a similar study in Australia. As a result of that study, the Australian government has now established a national infrastructure fund and a new national agency to provide financing for local and regional transportation and other major infrastructure projects that were expected to improve national economic performance.²²

The Solution

Our transportation system policies are in need of fundamental change. Alberta needs a strategic plan to provide a long-term vision for an integrated transportation

system to facilitate the safe and efficient movement of vehicles, products and people.

A long-term provincial transportation strategy should anticipate and account for the pressures of economic and population growth, social and environmental impacts, and technological advances on our transportation network. It must ensure Alberta has the essential roads and highways, utilities and facilities to support our quality of life and secure our province's economic prosperity, now and into future. This strategy is needed to guide government



Improving transportation infrastructure outcomes requires the right system, governance and enablers to be aligned.

decision making including investments, policies, and programs for a safe, sustainable and reliable transportation network to support a growing and changing Alberta.

As identified by McKinsey & Company, a solution for creating a safe and reliable transportation system will require consideration of a number of factors including: governance; collaboration between stakeholders; and enabling foundations.²³

20 <https://www.liikennevirasto.fi/web/en>

21 <http://web.archive.nationalarchives.gov.uk/20081230093524/http://www.dft.gov.uk/about/strategy/transportstrategy/eddingtonstudy/>

22 <http://infrastructureaustralia.gov.au/>

23 <https://www.mckinsey.com/~media/mckinsey/industries/capital%20projects%20and%20infrastructure/our%20insights/improving%20the%20delivery%20of%20road%20infrastructure%20across%20the%20world/a-better-road-to-the-future-improving-the-delivery-of-road-infrastructure.ashx>

A holistic approach is required to significantly and sustainably improve a jurisdiction's road network, improvements will only be impactful when designed and implemented using a systematic approach. It is not enough to increase funding for road investments and maintenance. The way infrastructure is being delivered—the delivery system—must also change for the better, or economic growth will be hampered with slower socioeconomic progress as a result.²⁴

There are many components of best practice that are already being demonstrated in countries all around the globe to improve the road infrastructure delivery systems.

The decline in infrastructure in

Alberta's transportation infrastructure over the past 16 years has not yet reached a crisis stage. However the safety and reliability our roads is a serious concern and Alberta requires a coordinated effort to alter the trajectory towards renewal, resilience, sustainability and innovation of our transportation system.

The Alberta Roadbuilders and Heavy Construction Association is working to bring together stakeholders from both the public and private sector to discuss the growing need to integrate design, building, finance and operating models necessary to make our transportation infrastructure successful. There is too much at stake to discount these challenges any further.

Now is the time for stakeholders to take decisive actions to reform the policies, processes, and practices and ensure continued prosperity of Albertans through a well built and managed transportation system.

Best Practices to Improve Road Infrastructure Delivery Systems ²⁵	
Improve Project Selection	Establish a rigorous, fact-based project evaluation and a transparent process for establishing what can be done and in what order. Having one entity responsible for evaluating projects and establishing a fact-base enables policy makers and elected officials to properly prioritize.
Streamline delivery	Boost cooperation in the sector across contracting, tendering, site management, and stakeholder management.
Make the most of existing infrastructure	Focusing on maintenance, building a fact-based maintenance strategy that reduces lifecycle costs of the road, and ensuring that assets are not allowed to deteriorate to the point where reconstruction costs start to rise sharply, governments can increase the reliability of the road network and reduce the overall cost of ownership.
Ensure effective sector governance	The effectiveness of the road delivery system ultimately rests on collaboration and the capabilities and competence of the people involved.
Enhance funding and finance frameworks	Complement public funds with access to private money. Tools ranging from toll stations, infrastructure bonds, real estate appreciation capture, congestion charges, public-private-partnerships, build-operate-transfer, and other methodologies can be part of the toolbox and considered as a way of topping up available funds.

24 Ibid

25 Ibid